IN THE CLAIMS

Please amend claims 1, 2, 4, 7 and 23 as follows:

1. (CURRENTLY AMENDED) A photonic device having an intermittent light absorption profile along a waveguide, wherein the light absorption profile is divided into low-absorption and high-absorption segments that are distributed axially along the waveguide in order to decrease a maximum local temperature in the device.

2. (CURRENTLY AMENDED) The device of claim 1, wherein the low-absorption segments' lengths vary along the ~~element~~ device.

3. (ORIGINAL) The device of claim 1, wherein the low-absorption segments number from 1 to 10.

4. (CURRENTLY AMENDED) The device of claim 1, wherein the high-absorption segments' lengths vary along the ~~element~~ device.

5. (ORIGINAL) The device of claim 1, wherein a low-absorption segment is located at an input of the device and is followed by at least one high-absorption segment.

6. (ORIGINAL) The device of claim 1, wherein a low-absorption segment is located at an output of the device and is preceded by at least one high-absorption segment.

7. (CURRENTLY AMENDED) The device of claim 1, further comprising one or more metal electrodes on a ridge cladding layer on the waveguide, wherein the electrodes cover an entire length of the ~~element~~ device.

8. (ORIGINAL) The device of claim 7, wherein the absorption segments include one or more high-absorption segments and one or more low-absorption segments, and separate ones of the metal electrodes contact the high-absorption and low-absorption segments.

9. (ORIGINAL) The device of claim 8, wherein voltages applied to the electrodes are adjusted to produce the high-absorption segments and low-absorption segments of the device.

10. (ORIGINAL) The device of claim 9, wherein separate ones of the electrodes are used as elements of a dual stage electro-absorption modulator.

11. (ORIGINAL) The device of claim 1, wherein the waveguide is comprised of a bulk material and the Franz-Keldysh effect is used to change the material's absorption coefficient or index of refraction with an applied electrical field.

12. (ORIGINAL) The device of claim 1, wherein the waveguide contains quantum well material and the Quantum-Confined-Stark effect is used to change the material's absorption coefficient or index of refraction with an applied electrical field.

13. (ORIGINAL) The device of claim 1, wherein the absorption segments include one or more low-absorption segments that are defined by proton implantation of a ridge cladding layer.

14. (ORIGINAL) The device of claim 13, wherein the absorption segments include one or more high-absorption segments that are defined by a lack of proton implantation in the ridge cladding layer.

15. (ORIGINAL) The device of claim 1, wherein the waveguide is a quantum well waveguide, the absorption segments include one or more high-absorption segments and one or more low-absorption segments, and the high-absorption segments and low-absorption segments are defined by selective-area disordering of the quantum well waveguide.

16. (ORIGINAL) The device of claim 1, wherein the device is an electro-absorption modulator.

17. (ORIGINAL) The device of claim 1, wherein the device is part of a multi-stage modulator.

18. (ORIGINAL) The device of claim 1, wherein the device is part of a Mach-Zender interferometer.

19. (ORIGINAL) The device of claim 1, wherein the device is a photodetector.

20. (ORIGINAL) The device of claim 1, wherein the device is monolithically integrated with a semiconductor laser diode.

21. (ORIGINAL) The device of claim 20, wherein the semiconductor laser diode is a wavelength-tunable semiconductor laser diode.

22. (ORIGINAL) The device of claim 20, wherein the device is monolithically integrated with other optical elements selected from a group comprising semiconductor optical amplifiers, mode size converters, and photodetectors.

23. (CURRENTLY AMENDED) A method of fabricating a photonic device <u>having an intermittent light absorption profile along a waveguide, wherein the light absorption profile is divided into low-absorption and high-absorption segments that are distributed axially along the waveguide in order to decrease a maximum local temperature in the device, the method</u> comprising:

creating a plurality of different absorption segments that are distributed axially along a waveguide of the device in order to decrease a maximum local temperature in the device, wherein a photo-induced current generates heat in the device, and the absorption segments decrease the heat.

24. (ORIGINAL) The method of claim 23, wherein the low-absorption segments' lengths vary along the device.

25. (ORIGINAL) The method of claim 23, wherein the low-absorption segments number from 1 to 10.

26. (ORIGINAL) The method of claim 23, wherein the high-absorption segments' lengths vary along the device.

27. (ORIGINAL) The method of claim 23, wherein a low-absorption segment is located at an input of the device and is followed by at least one high-absorption segment.

28. (ORIGINAL) The method of claim 23, wherein a low-absorption segment is located at an output of the device and is preceded by at least one high-absorption segment.

29. (ORIGINAL) The method of claim 23, further comprising creating one or more metal electrodes on a ridge cladding layer on the waveguide, wherein the electrodes cover the entire length of the device.

30. (ORIGINAL) The method of claim 29, wherein the absorption segments include one or more high-absorption segments and one or more low-absorption segments, and separate ones of the metal electrodes contact the high-absorption and low-absorption segments.

31. (ORIGINAL) The method of claim 30, wherein voltages applied to the electrodes are adjusted to produce the high-absorption segments and low-absorption segments of the device.

32. (ORIGINAL) The method of claim 31, wherein separate ones of the electrodes are used as elements of a dual stage electro-absorption modulator.

33. (ORIGINAL) The method of claim 23, wherein the waveguide is comprised of a bulk material and the Franz-Keldysh effect is used to change the material's absorption coefficient or index of refraction with an applied electrical field.

34. (ORIGINAL) The method of claim 23, wherein the waveguide contains quantum well material and the Quantum-Confined-Stark effect is used to change the material's absorption coefficient or index of refraction with an applied electrical field.

35. (ORIGINAL) The method of claim 23, wherein the absorption segments include one or more low-absorption segments that are defined by proton implantation of a ridge cladding layer.

36. (ORIGINAL) The method of claim 35, wherein the absorption segments include one or more high-absorption segments that are defined by a lack of proton implantation in the ridge cladding layer.

37. (ORIGINAL) The method of claim 23, wherein the waveguide is a quantum well waveguide, the absorption segments include one or more high-absorption segments and one or more low-absorption segments, and the high-absorption segments and low-absorption segments are defined by selective-area disordering of the quantum well waveguide.

38. (ORIGINAL) The method of claim 23, wherein the device is an electro-absorption modulator.

39. (ORIGINAL) The method of claim 23, wherein the device is part of a multi-stage modulator.

40. (ORIGINAL) The method of claim 23, wherein the device is part of a Mach-Zender interferometer.

41. (ORIGINAL) The method of claim 23, wherein the device is a photodetector.

42. (ORIGINAL) The method of claim 23, wherein the device is monolithically integrated with a semiconductor laser diode.

43. (ORIGINAL) The method of claim 42, wherein the semiconductor laser diode is a wavelength-tunable semiconductor laser diode.

44. (ORIGINAL) The method of claim 42, wherein the device is monolithically integrated with other optical elements selected from a group comprising semiconductor optical amplifiers, mode size converters, and photodetectors.